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NKK

NKK
CHALLENGES THE ARCTIC

By consolidating its advanced capabilities in steelmaking, shipbuilding, engineering and construction.

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Development-Production

Caisson-retained production islands, jackets, deck modules, tension leg platforms, guyed towers, first-stage crude oil treatment systems, oil and gas separation systems, mobile production systems, subsea production systems, 2nd and 3rd recovery systems
Derrick barges, pipelay barges, launching barges, SDCs, DDCs, submersible manned survey craft, multipurpose supply boats

Hook-up vessel ''Shinsho 300''

Caisson-retained production island

Pipelay barge ''KP I'' and deck module for Aga platform

Pipeline

Mobile production system

North Rankin ''A'' Jacket

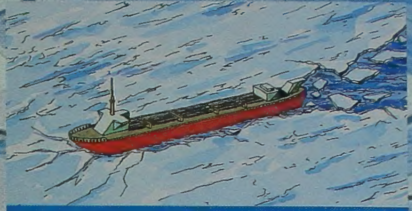
Tension leg platform

Oil tanker "ESSO MADRID"

Transportation-Storage-Refining

Tankers, LPG carriers, LNG carriers, icebreaking tankers, submarine pipelines, pipeline systems, LNG storage tank systems, LPG storage tank systems, petroleum storage tank systems, sea berth systems, plant modules for refining and hydrocarbon processes

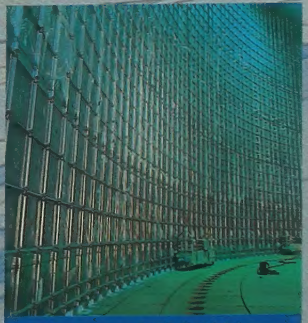
LPG tanker "TATSUTAMARU"


Icebreaking tanker

Alyeska pipeline

LNG storage tank for Tokyo GAS Co.

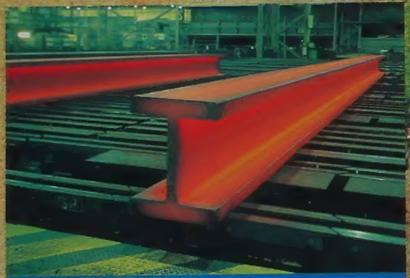
Plant module-ethylene complex for Saudi Petro-Chemical Co.

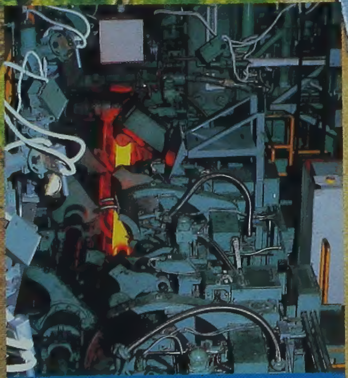

LNG storage tank (inside)

Materials

High-grade oil country tubular goods (drill, casing and line pipe), piles, bars, shapes and plates for low-temperature use

Basic oxygen furnace


Wide flange shapes


Medium-diameter seamless tube mill

On-Line Accelerated Cooling System (OLAC)

Plate finishing mill

Geophysical Survey

Geophysical survey vessels, observation vessels

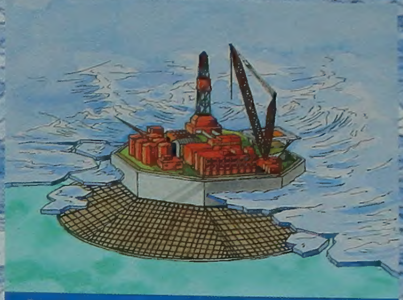
Icebreaker "Shirase"

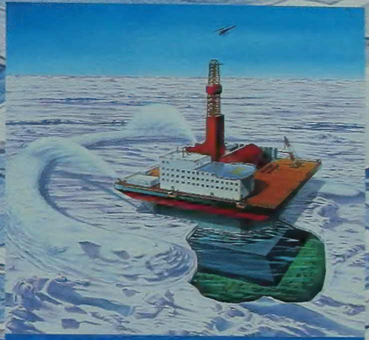
Icebreaking patrol ship "Soya"

Iceb ing supply vessel "Ikaluk"

Exploration

Arctic submersible rigs, steel caisson rigs, mono-pod type rigs, ice-worthy rigs, jack-up rigs, semisubmersible rigs, drill ships, icebreakers, icebreaking supply vessels


Steel caisson rig


Arctic submersible rig (Super CIDS)

Semisubmersible rig "PENROD 76"

Jack-up rig "JFP THREE"

Arctic Research and Development

Basic research and experiments on sea ice

Ice property tests at NKK's lab (cold room), Lake Saroma and Beaufort Sea

Ice strength test at Lake Saroma

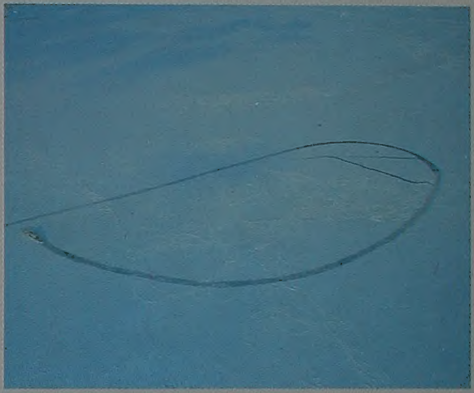
Multiyear ice ridge study in Alaskan Beaufort Sea

Development of icebreakers

Model tests at NKK's lab (ice basin), Hamburg ice basin, Lake Saroma

Tests on board the "Soya," "Shirase" and "Ikaluk"

Model test of icebreaker hull forms at NKK's ice basin



"Soya" in a turning test on the Sea of Okhotsk

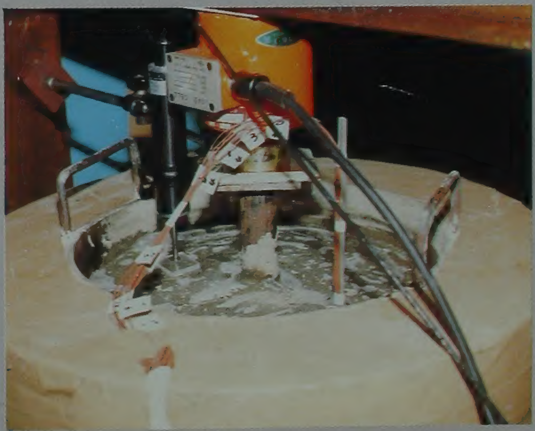
Development of arctic offshore structures

Model tests at NKK's lab (ice basin) and Lake Saroma

Ice-force measurement test using an offshore structure model

Development of cold-region buildings

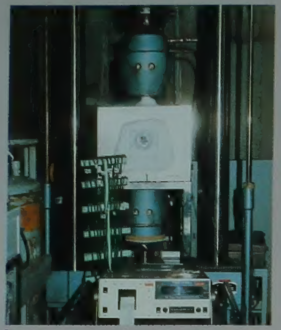
NKK's lab (cold room)

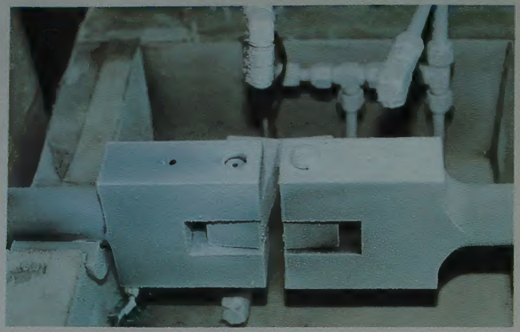


Adfreezing strength - frost heave test

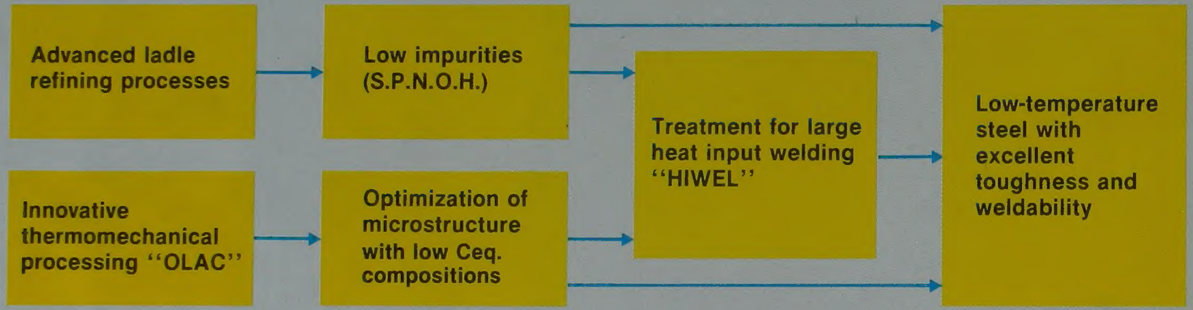
Material Development for Low-Temperature Use

Development of low-temperature steel


Low temperature fracture toughness testing by 20 ton machine


Specimen tested at −100°C

NKK's approach to R&D and production of low-temperature steel


Advanced ladle refining processes

Low impurities (S.P.N.O.H.)

Innovative thermomechanical processing "OLAC"

Optimization of microstructure with low Ceq. compositions

Treatment for large heat input welding "HIWEL"

Low-temperature steel with excellent toughness and weldability

Development of low-temperature concrete

Low-temperature concrete strength tests

Development of paint for use in low temperatures

Endurance test for ice-resistant paints

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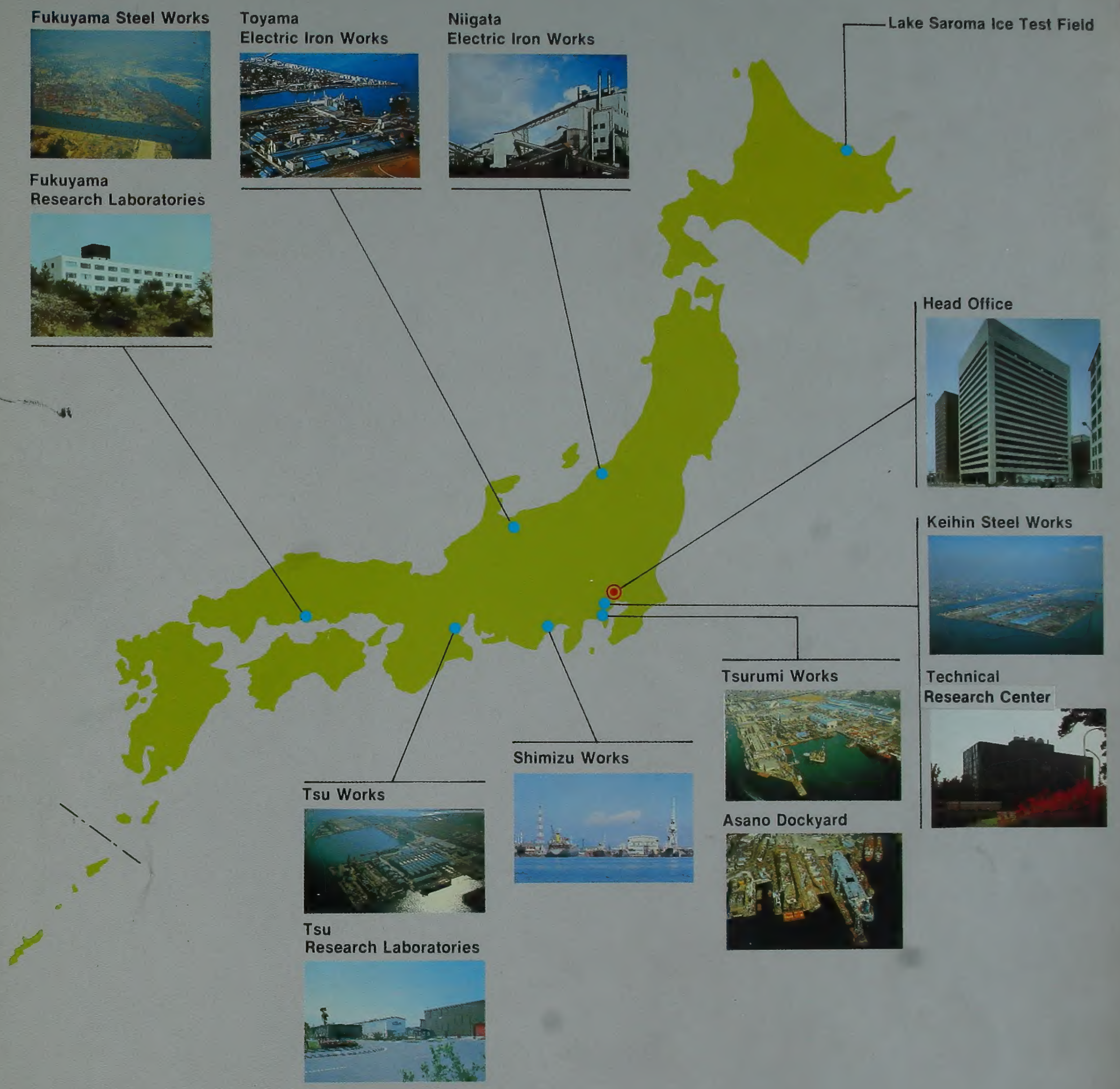
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NKK
NIPPON KOKAN

Head Office
1-2, 1-Chome, Marunouchi, Chiyoda-ku, Tokyo, Japan
Tel: (03) 212-7111
Cable: KOKANNK TOKYO, KOKAN JUKOO TOKYO, KOKANSHIP TOKYO
Telex: 222-2811 (NKK J) 222-2816 (NKSHIP J)

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